NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MEMORANDUM FOR: Distribution

FROM: W/OPS1 - John McNulty

SUBJECT: Installation of an Auxiliary (AUX) Box and a Ground-To-Air (GTA) Radio to a Single Cabinet Assembly (SCA)

1. Material Transmitted:

Engineering Handbook No. 11 (EHB-11), Installation of an AUX Box and a GTA Radio to a SCA

2. Summary:

The SCA is too small for installation of a GTA radio. This modification note outlines the procedures for installing an AUX box to the backside of an SCA, and the procedures to mount a GTA radio inside that AUX box.

3. Effect on Other Instructions:

None.

Distribution:
EHB-11 distribution

FILE
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CODE	SURNAME	DATE	CODE	SURNAME	DATE

NOAA FORM 61-2

ASOS MODIFICATION NOTE 70 (for Electronics Technicians)
Maintenance Branch
W/OPS12: WDW

SUBJECT	:	Installation of an Auxiliary (AUX) Box and a Ground-To-Air (GTA) Radio to a Single Cabinet Assembly (SCA)
PURPOSE	:	To enable a small SCA to transmit regularly updated surface observations and information to pilots and other listeners via the GTA Radio.
EQUIPMENT AFFECTED	:	SCA
PARTS REQUIRED	:	Modification Kit: S100-Field Modification Kit (FMK) 126 (AUX Box) S100-FMK51 (GTA Radio) S100-FMK70 (Mounting Hardware) See attachment C for parts listing of each kit.
SPECIAL TOOLS REQUIRED	:	Crimping tool (58078-3) with die (58080-1) Pipe wrench for 1-½" conduit fittings
MODIFICATION PROCUREMENT	:	Washington Central Support will issue these kits upon a coordinated request from the regional focal point
EFFECTIVITY	:	All Automated Surface Observing System (ASOS) sites referenced in the Verification Statement
ESTIMATED TIME REQUIRED	:	8 Hours
EFFECT ON OTHER INSTRUCTIONS	:	None
AUTHORIZATION	:	This modification is authorized by Request for Change S01103
VERIFICATION STATEMENT	:	This modification has been tested for operational integrity at the sites listed in attachment A.

GENERAL:

The SCA is too small for installation of a GTA radio. This modification note outlines the procedures for installing an AUX box to the backside of an SCA, and the procedures to mount a GTA radio inside that AUX box. For a general physical description of the AUX box, refer to the Site Technical Manual, section 14.1.9, page 14-11.

The three FMKs associated with this modification are a collection of kits from different modification notes. FMK126 includes a universal power supply (UPS) and associated hardware. FMK51 includes mounting hardware to install a GTA radio in an acquisition control unit (ACU) cabinet. Only install the components as instructed in this modification note.

PROCEDURE:

A. BEFORE INSTALLATION OF THE AUX BOX AND GTA RADIO

1. Call the ASOS Operations and Monitoring Center (AOMC) at 1-800-242-8194 and provide notification on which ASOS you will be installing an AUX box and GTA radio.
2. Get approval of the responsible meteorologist-in-charge (MIC)/official-in-charge (OIC)/Observer before starting installation. Installation of the UPS may be performed on any day of the month if restrictions in steps 3 and 4 are satisfied.
3. **Commissioned Sites Only:** Do not start installation during inclement weather, precipitation, instrument flight rule (IFR) conditions, or if any of those conditions are expected within 3 hours. The responsible MIC/OIC/Observer will define these meteorological conditions.
4. Do not start this installation at a time that will conflict with scheduled synoptic observations at 00, 03, 06, 09, 12, 15, 18, and 21Z. Allow 8 hours to complete the installation and restart the ASOS.
5. Immediately before beginning work at the National Weather Service (NWS) staffed sites, the MIC/OIC/Observer informs the tower and any other critical users that the ASOS will be turned off for the data collection package (DCP) upgrade. At an unstaffed site, the electronics technician informs the tower, which is using controller video displays (CVD) and operator interface devices (OID), to log off and shut down the displays to avoid problems.
6. Do not begin the installation process until immediately after an hourly observation has been transmitted. At NWS-staffed sites, normal backup observing procedures will be implemented.

7. At the OID, log on as TECH.

   a. Key **MAINT** - **ACT** - **FMK** and enter MOD **70**.

   b. Key **MAINT** - **ACT** - **FMK** - **START**.

B. INSTALLATION OF THE AUX BOX

NOTE: Make a printout of the system maintenance page prior to starting this FMK. If there are any failures, make copies of the maintenance pages of the failed unit(s).

1. At the OID, sign on as TECH and press **REVUE - SITE - CONFG - COMMS**. Check for the availability of a spare RS-232 port and record its location. If an RS-232 port is not available, an additional board will need to be installed.
2. Open the alternating current (AC) junction box and switch OFF the circuit breaker labeled SCA.
3. Using a 1-½ inch Greenlee knockout punch, make two holes in the bottom of the SCA enclosure to receive the liquid tight conduit connection from the AUX box. Refer to figure 1.

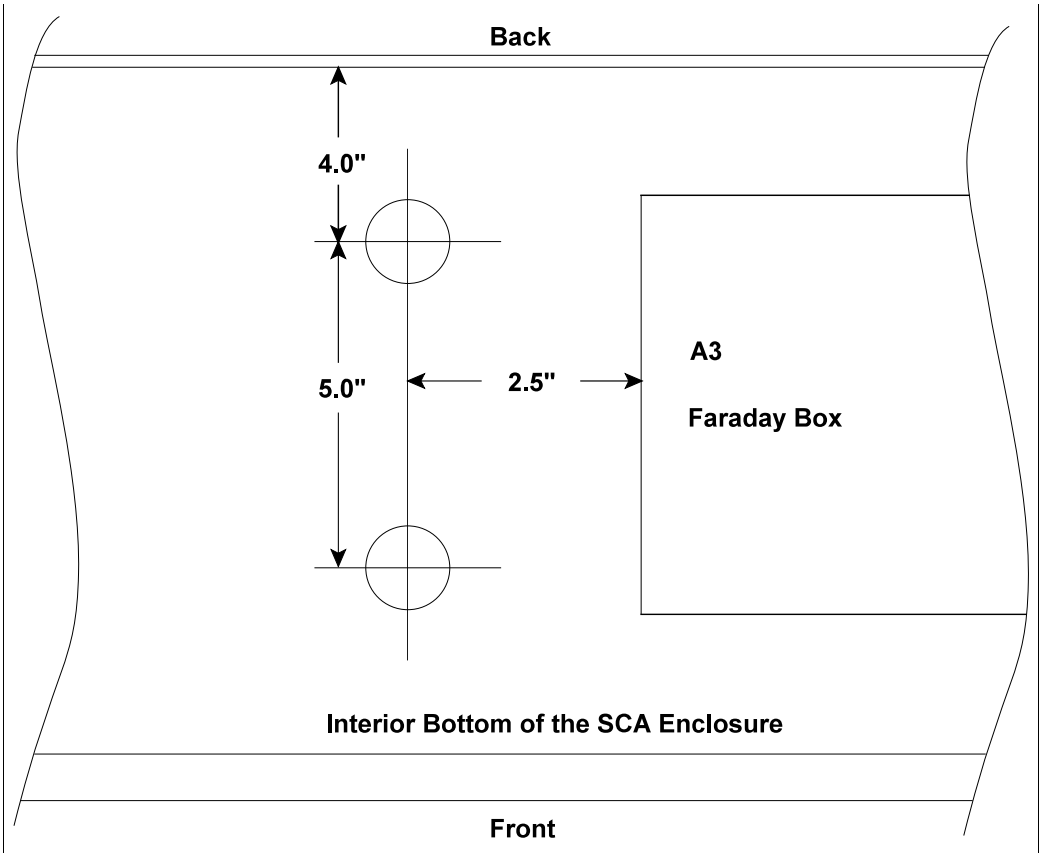

Figure 1 SCA Conduit Hole Locations

4. Install the AUX box on the SCA mounting poles directly behind the SCA enclosure. Refer to figure 2.

   a. From FMK126, attach the 6-foot ground wire to the AUX box mounting hardware as shown in view A-A of figure 2. Attach the other end to the installation ground wire running below the SCA enclosure, using the split bolt provided in FMK126.

   b. Connect the liquid tight conduit between the AUX box and the SCA enclosure using the conduit connectors. Connect one conduit between the 2 inch hole nearest to the AUX box side and the 2 inch hole closest to the door of the SCA. Connect another conduit between the remaining 2 inch holes.

   c. Plug unused holes in the AUX box enclosure using the two 1 inch and one ¾ inch knockout sealing caps provided in FMK126.

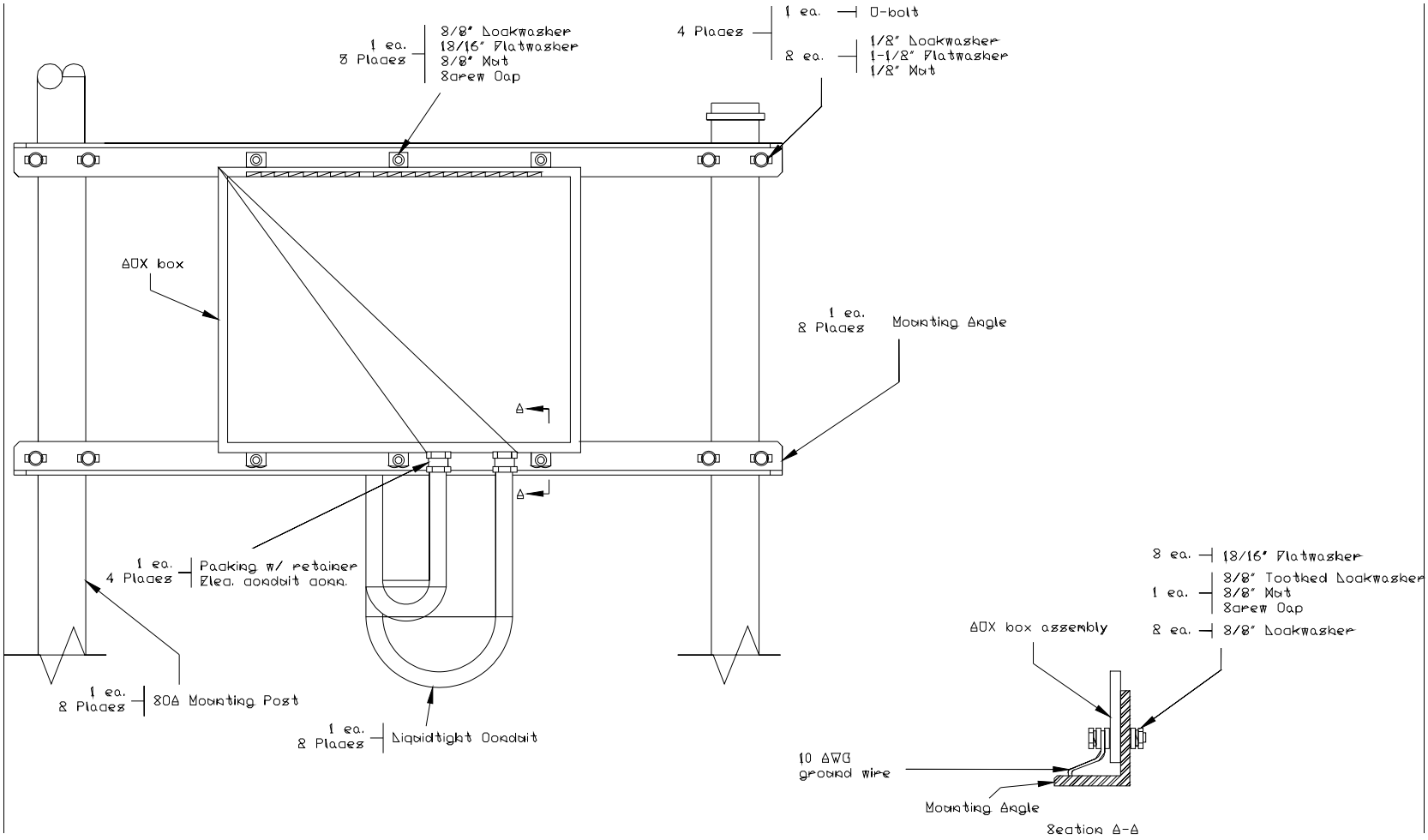

Figure 2 Auxiliary Box Installation

C. INSTALLATION OF THE GTA RADIO

1. Install the radio frequency (RF) surge protector to the bottom of the AUX box as illustrated in section A-A of figure 3.
2. In the AUX box, attach the mounting bracket lanyard and mounting bracket to the AUX box backplane as illustrated in figure 3. Attach one end of the lanyard restraint to the mounting bracket lanyard.
3. Attach the retainer bracket to the right side of the GTA radio, near the front of the radio. Refer to figure 3, noticing the GTA radio is stowed away vertically inside the AUX box.
4. Attach the mounting plates to each side of the GTA radio as illustrated in figure 3. Also attach the free end of the lanyard restraint to the left side of the GTA radio.
5. Mount the GTA radio onto the mounting bracket using the 2 shoulder screws as illustrated in figure 3.
6. Secure the GTA radio, in its vertical position, to the mounting bracket assembly with the captive screw on the retainer bracket.
7. Attach the opposite end of the lanyard restraint to the left side of the GTA radio as illustrated in figure 3.

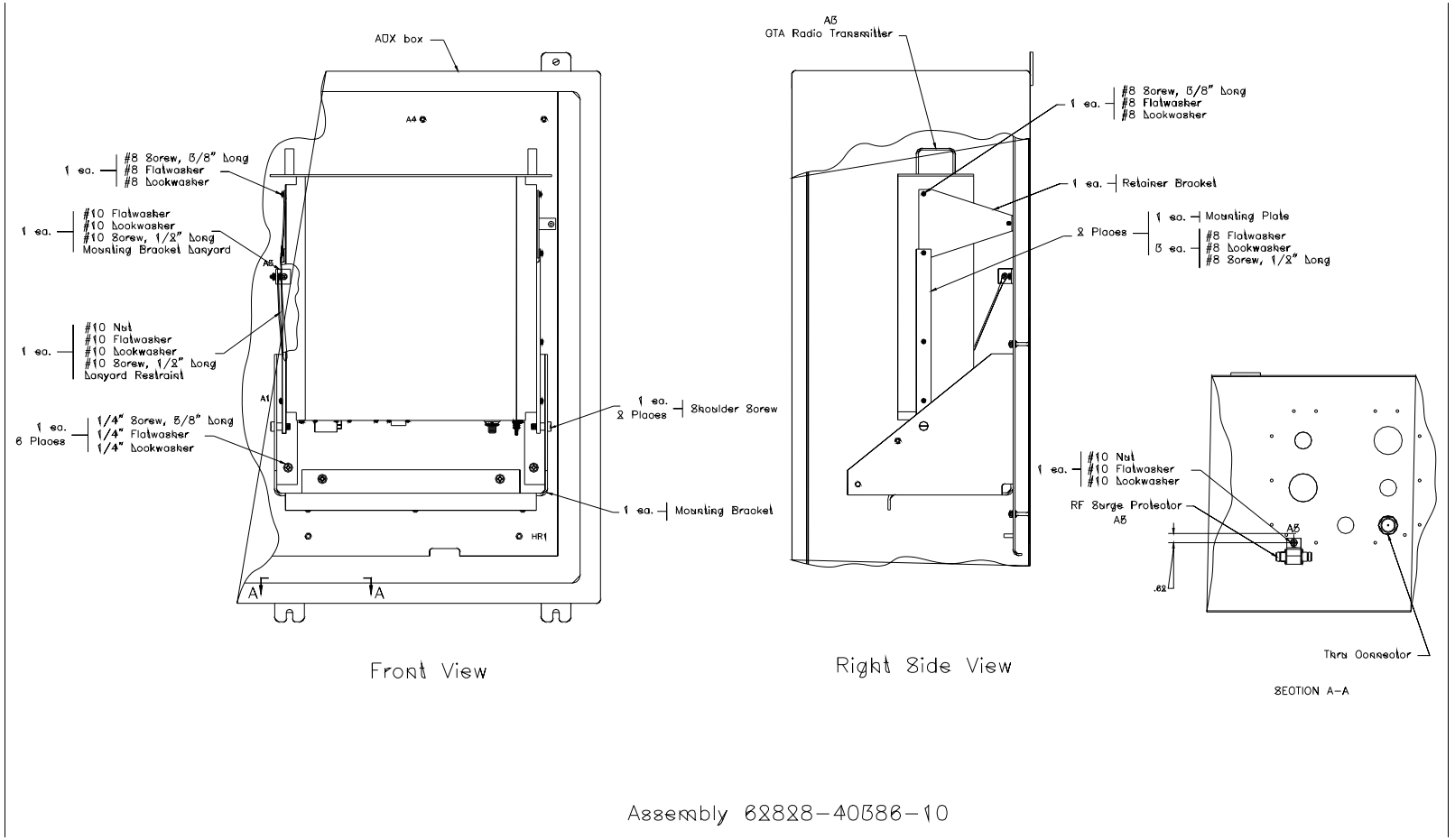

Figure 3 GTA Radio and Mounting Bracket Installation

D. WIRING THE AUX BOX AND GTA RADIO

NOTE: A wiring diagram for this entire modification is provided in figure 4.

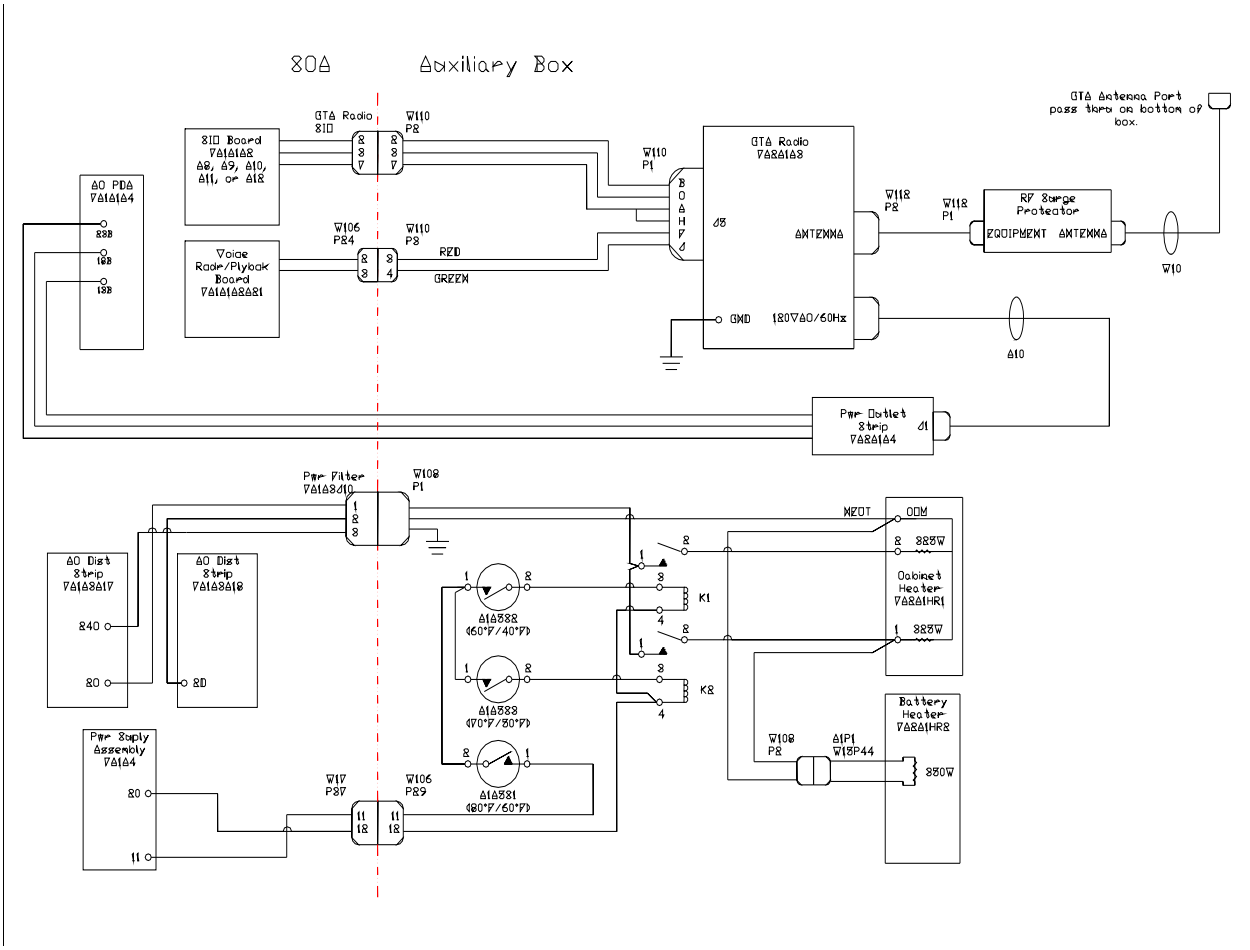

Figure 4 Wiring Diagram

1. Connect W110P1 to the remote connector labeled “J5” on the back of the GTA radio.
2. Run the P2 and P3 connectors through the conduit and into the SCA.
3. From FMK51, open the TELCO jack and connect W110P3 RED and W110P3 GREEN to the red and green contacts on the TELCO jack.
4. Connect W106P24 to the other side of the TELCO jack running from the Voice Recorder/Playback board.

5. In the SCA, find the cable for the serial input/output (SIO) port (recorded in section B, step 1) and connect it to W110P2.

6. Make the following connections in the AUX box:

   a. Run the peripheral cable assembly bundle, W111, through the conduit, and connect the 3 wires to the AC power distribution assembly as labeled.

   b. Connect the power cable assembly, A10, from the “120VAC/60Hz” connector on the back of the GTA radio to an outlet on the peripheral cable assembly.

   c. Use the longer antenna cable and connect W112 P2 to the “ANTENNA” connector on the back of the GTA radio.

   d. Connect W112 P1 to the “EQUIPMENT” side of the RF surge protector.

   e. Connect the shorter antenna cable, W10, from the “ANTENNA” side of the RF surge protector to the thru connector located on the bottom of the AUX box.

7. In the AUX box, connect a 14-American wire gauge (AWG) green wire from the “GND” post on the back of the GTA radio to any convenient grounding spot on the AUX box backplane.

8. In the SCA, open the Faraday box and remove the cover at the connector position marked for J10. Install the power filter connector from FMK51.

9. From FMK51, cut 2 foot lengths from the 3-foot gray, 5 foot white, and 6 foot green wires.

10. Apply the wire markers and receptacle contacts to the 2 foot lengths as illustrated in figure 5.

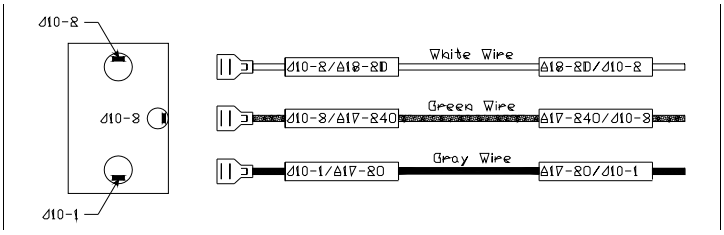

Figure 5 Power Filter Wiring

11. Connect these wires as labeled, and close the Faraday box.

12. In the AUX box, run the red and black wires, labeled W106P29-11 and W106P29-12 respectively, through the conduit and into the SCA. Connect these wires to W17P37.

13. Spot tie any loose wires in both the AUX box and SCA.

14. Reapply power to the SCA.

E. GTA RADIO CONFIGURATION

1. Lower the GTA radio into its horizontal position and depress the “AC PWR” switch on the front of the radio.

2. At the OID, sign on as TECH and press **REVUE - SITE - CONFIG - COMMS**. Move the cursor to the SIO slot recorded in section B, step 1.

3. Press **CHANG** and setup the port as follows:

Table 1 COMMS Page Setup

	FUNCTION	**GTA RADIO**	
STATUS	**ENABLED**	HANDSHAKE	**NONE**
BAUD RATE	**1200**	CONNECTION	**HARD-WIRE**
PARITY SELECT	**NONE**		
BITS/CHAR	**8**		
STOP BITS	**1**	FREQUENCY	**XXX**
		POWER LEVEL	**XXX**

XXX Enter the site-specific FREQUENCY and POWER LEVEL values assigned to the ASOS under modification. If these values have not been assigned, enter **118.000** for the FREQUENCY and **050** for the power level.

4. Press **Exit**.

F. AFTER GTA RADIO INSTALLATION

NOTE: Do note radiate into the antenna using a test frequency. Use a dummy load as the antenna for all tests that require an antenna to be connected. At the end of testing, secure the GTA power setting. The Federal Aviation Administration is licensed for a maximum power output of 2.5 watts at the transmitter. Do not exceed this 2.5 watt output limit.

1. Proceed with the following GTA radio checks by referencing their associated documents:

Table 2. GTA Radio Checkout Procedure List

	GTA Radio Check Procedure	Reference	Sign-Off
A:	Voice Recorder/Playback Board Check	Errata 1 - Maintenance Note 42	
B:	RF Power Output Check	STM - Table 12.5.2	
C:	Modulation Level Check	STM - Table 12.5.3	
D:	VSWR at Transmitter Output Check	STM - Table 12.5.4	
E:	Frequency Stability Check	STM - Table 12.5.5	
F:	Coax Conductance and Insulation Check	STM - Table 12.5.6	

2. Call the AOMC at 1-800-242-8194 and inform the operator of:
   a. Your location.
   b. The installation of the GTA radio has been completed.
3. Enter in the **SYSLOG** that this modification has been completed.
   a. At the OID, press **MAINT - ACT - FMK**.
   b. Enter the number as follows: **MOD70**
   c. On the second line of the screen, verify that only mod 70 is displayed. Complete by entering **Y** in the [Y/N] area.
4. Check the SYSLOG and verify the FMK message. Enter a comment in the SYSLOG stating the GTA radio modification has been completed.

REPORTING INSTRUCTIONS:

Target date for completion of this modification is 30 days after receipt of parts. Report the completed modification on a WS Form A-26 according to the instructions in Engineering Handbook 4 (EHB-4), Engineering Management Reporting System (EMRS), Part 2, Appendix F. Include the following information on the WS Form A-26:

a. Equipment code of **AGTA** in block 7.
b. Serial number of the GTA radio in block 8.
c. Modification number as **70** in block 17a.

A sample WS Form A-26 is provided as attachment B.

John McNulty
Chief, Maintenance, Logistics, and Acquisition Division

Attachment A - Site Table
Attachment B - WS Form A-26 Sample
Attachment C - Parts List

W/OPS12: BWhisel:713-1833x161
File: C:\My Files\Web Page Stuff\ASOSMain\Mod_Notes\Mod 70.wpd
updated: 3/11/02

Attachment A

SCA Sites to Add a GTA Radio			
Site ID	**City, State**	**Region**	**Site Classification**
LXV	Leadville, CO	Central	S1
GUY	Guymon, OK	Southern	S1

WS Form A-26 Sample

ENGINEERING MANAGEMENT REPORTING SYSTEM
MAINTENANCE RECORD

Document Number: G 49978

General Information

1. Open Date	Time	2. Initials	3. Response Priority (check one)	4. Close Date	Time
06 / 01 / 00	0900	DKR	○ Immediate ○ Routine ○ Low ⊗ Not Applicable	06 / 01 / 00	1700

5. Description: INSTALL AUX BOX AND GTA I.A.W. MOD NOTE 70

Equipment Information

6. Station ID	7. Equipment Code	8. Serial Number	9. TM	10. AT	11. How Mal.
LXV	AGTA	14242	M	M	999

12. *EQUIPMENT OPERATIONAL STATUS TIMES*

a. Fully Operational	b. Logistics Delay	Partly Operational c. All Other	d. Logistics Delay	Not Operational e. All Other
		8:00		

13. *Parts Failure Information*

Block #	a. ASN	b. NSN	c. TM	d. AT	e. How Mal.	f. Qty.	g. Maint. Hrs.
1							
2							
3							
4							
5							

14. *Work Load Information*

Type	Staff Hrs.
a. Routine	
b. Non-routine	
c. Travel	2:00
d. Misc.	8:00
e. Overtime	

Miscellaneous Information

15. Maintenance Comments: INSTALLED AUX BOX AND GTA INTO SCA

16. Initials: DKR

17. *SPECIAL PURPOSE REPORTING*

a. Mod. No.	b. Mod./Act./Deact.Dat	c.	d.	e.
70	06/01/00			

18. *CONFIGURATION MGMT. REPORTING* (as directed)

ASN	Vendor Part Number (New Part)	Serial Number (Old Part)	Serial Number (New Part)

Attachment C

S100-FMK126 Small DCP UPS Installation - Alphabetical Listing		
Part Number	Quantity	Nomenclature
	1	Wire Marker: A1A4-9B/P45-2
	1	Wire Marker: A1A4-23A/P33-3
	1	Wire Marker: A1A4-23B/P45-3
	1	Wire Marker: A17-2C/J10-1
	1	Wire Marker: A17-24C/J10-3
	1	Wire Marker: A18-2D/J10-2
	1	Wire Marker: J10-1/A17-2C
	1	Wire Marker: J10-2/A18-2D
	1	Wire Marker: J10-3/A17-24C
	1	Wire Marker: P33-1/P4-1
	1	Wire Marker: P33-2/P4-2
	1	Wire Marker: P33-3/A1A4-23A
	1	Wire Marker: P33-3/P4-3
	1	Wire Marker: P45-1/P3-1
	1	Wire Marker: P45-2/A1A4-9B
	1	Wire Marker: P45-2/P3-2
	1	Wire Marker: P45-3/A1A4-23B
	1	Wire Marker: P45-3/P3-3
62828-40368-10	1	UPS Kit
62828-40370-10	1	Auxiliary Box Assembly
62828-40377-10	1	Power Filter Kit (J10)
62828-40431-10	1	UPS Bypass Kit
62828-90141-2	3	Insulated Crimp Receptacle
62828-90254-1	1	Split Bolt
62828-90272-1	1	Sealing Cap, ¾"
62828-90272-3	2	Sealing Cap, 1"
62828-90344-1	2	Electrical Plug

62828-90345-1	2	Connector Body
Greenlee #75BB	1	1-½" Knockout Punch
M16878/5BKE8	1	3' Gray Wire, 14 AWG
M16878/5BKE9	1	5' White Wire, 14 AWG
M16878/5BKE5	1	6' Green Wire, 14 AWG
MS3367-4-9	12	Wire Tiedown Straps
QQW343S10S1B	1	6' Ground Wire
UPS Bypass Kit (62828-40431-10) Alphabetical Listing		
62828-40431-1	1	Marker No. 1 (P45-1)
62828-40431-2	1	Marker No. 2 (A1A9XK3-2)
62828-40431-3	1	Marker No. 3 (A1A9XK3-3)
62828-40439-4	1	Label, “K2"
62828-40439-5	1	Label, “K3 XK3"
62828-42102-10	1	DCP UPS Bypass Wire Harness (W131)
62828-90132-1	2	Spade Lug
62828-90428-1	1	High Power Relay (K3)
62828-90429-1	1	Digital I/O Module (K2)
62828-90430-1	1	High Power Relay Socket (XK3)
62828-90438-1	1	Wire Retainer, Relay
MS3367-4-9	12	Cable Ties

AUX Box Hardware Kit (62828-40429-10) Alphabetical Listing		
51026	1	Moly Dry Film Lubricant
62828-40068-1	2	Mounting Angle
62828-90096-3	9	Liquid Tight Conduit
62828-90097-3	4	Electrical Conduit Connector
62828-90293-3	4	Packing with Retainer
MS15795-814	8	13/32" ID x 13/16" OD flatwasher
MS15795-817	8	½" ID x 1-½" OD flatwasher
MS35308-364	6	Screw Cap
MS35335-63	2	⅜" tooth lockwasher
MS35338-141	7	⅜" lockwasher
MS35338-143	8	½" lockwasher
MS51972-3	6	⅜" nut
MS51972-5	8	½" nut
NAS3108C28-24	4	Bolt-U
UPS Kit (62828-40368-10) Alphabetical Listing		
62828-40266-10	1	Bracket Assembly
62828-90338-20	1	DELTEC UPS
62828-90341-3	1	Strap
62828-40263-1	2	Mounting Bracket Lanyard
62828-40223-10	1	Battery Heater Assembly
62828-40262-10	1	Battery Box Assembly
62828-90168-1	2	Hose Clamp
62828-90185-1	1	1-½' Tubing
MS51957-45	5	No. 8 screw, ½" long
MS15795-807	5	3/16" ID x ⅜" OD flatwasher
MS35338-137	5	No. 8 lockwasher
MS35649-2314	4	9/16" nut
MS35338-140	4	5/16" lockwasher
MS15795-812	4	11/32" ID x 11/16" OD flatwasher

S100-FMK51 Ground-To-Air Radio Parts List

Part Number	Quantity	Nomenclature
62828-40251-1	2	Slide mount bracket, 16-½" long
62828-42011-20	1	Peripheral cable assembly W79
62828-42016-40	1	Antenna cable assembly W51
62828-42027-10	1	GTA radio cable assembly, W76
62828-90198-1	1	RF surge protector
62828-90220-2	2	Slide mount bracket, 8-½" long
62828-90221-1	4	Nut bar
62828-90288-1	1	Unistrut nut
62828-90316-10	1	Ground to air radio
M22473C	1	Bottle of Loctite
MS15795-803	4	⅛"ID x ¼"OD flatwasher
MS15795-808	8	7/32"ID x 7/16"OD flatwasher
MS15795-810	1	9/32"ID x ⅝"OD flatwasher
MS35307-306	1	¼" screw, ¾" long
MS35338-135	4	No. 4 lockwasher
MS35338-138	8	No. 10 lockwasher
MS35338-139	1	¼" lockwasher
MS42696-C272	4	Counter sunk screw
MS51957-16	4	No. 4 screw, 7/16" long
MS51958-65	8	No. 10 screw, ¾" long

S100-FMK70
Mounting Hardware Parts List

Part Number	Quantity	Nomenclature
62828-40404-10	1	Mounting Bracket
62828-40401-10	1	GTA Radio Bracket Retainer
62828-90294-2	2	Mounting Plate
62828-90294-2	1	Lanyard Restraint
62828-90198-1	1	RF Surge Protector
62828-42016-20	1	RF Cable Assembly, 18" Long
62828-42016-60	1	RF Cable Assembly, 36" Long
62828-42027-30	1	GTA Radio Cable Assembly
MS51957-43	2	No. 8 screw, 3/8" long
MS15795-807	8	No. 8 flatwasher
MS35338-137	8	No. 8 lockwasher
MS51957-45	6	No. 8 screw, ½" long
MS35650-304	2	No. 10 nut
MS15795-808	3	No. 10 flatwasher
MS35338-138	3	No. 10 lockwasher
MS51958-63	2	No. 10 screw, ½" long
MS51957-80	6	¼" screw, 5/8" long
MS15795-810	6	¼" screw
MS35338-139	6	¼" lockwasher